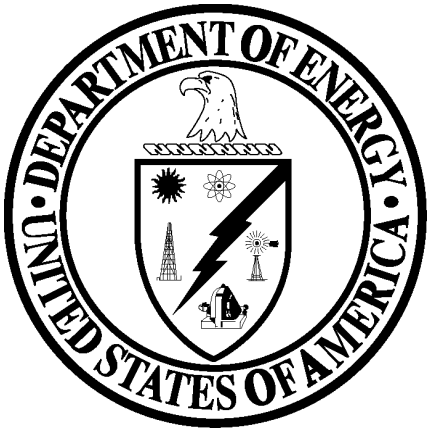
YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT ISMS PHASE I VERIFICATION REPORT



U.S. Department of Energy
Yucca Mountain Site Characterization Office
(YMSCO)

July 2000

Volumes I & II

I acknowledge, by signature below, that I concur with the Team Leader regarding the issues and conclusions in my assigned area(s), as described in this report, of the Integrated Safety Management System Verification for the Civilian Radioactive Waste Management (CRWM) M&O contract (Contract DE-AC01-91RW00134) for the Yucca Mountain Site Characterization).

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EXECUTIVE SUMMARY

Introduction

Department of Energy (DOE) Policy 450.4, *Safety Management System Policy*, commits to institutionalizing an Integrated Safety Management System throughout its complex as a means of accomplishing its missions safely. The Department of Energy Acquisition Regulation (DEAR, 48 CFR 970.5204-2) requires contractors to manage and perform work in accordance with a documented integrated safety management system.

The purpose of the Phase I Integrated Safety Management System Verification (ISMSV) was to provide the Yucca Mountain Site Characterization Office (YMSCO) Project Manager with a recommendation regarding the approval of the Civilian Radioactive Waste Management's (CRWM) management and operating (M&O) contractor's Integrated Safety Management System Description, based on the requirements of 48 CFR 970.5204 (-2 and -78), DOE 450.4, and DOE P 450.5. A secondary purpose was to evaluate the role of DOE in support of the contractor's integrated safety management system.

This report documents the results of the review conducted to verify: (1) that the M&O contractor's Integrated Safety Management System Description, including supporting ES&H system documents, satisfies the requirements of the integrated safety management DEAR clauses; and (2) that YMSCO is effectively implementing its integrated safety management-related functions, responsibilities, and authorities as delineated in the Office of Civilian Radioactive Waste Management (OCRWM) Safety Management Functions, Responsibilities, and Authorities Manual (DOE/RW-0521, Jan. 14, 2000), the Project Management Plan (YMP/CC-0028, September 1999), YMP Integrated Safety Management Plan (DOE/RW-0523), and Draft QAP-1.19Q Organization. The general conduct of the verification was consistent with the protocol established in the DOE's *ISMS Verification Team Leader's Handbook*.

The ISMSV Team received preliminary training and orientation on the M&O contractor's operations, facilities, processes, and systems during a site visit on June 19-23, 2000. The Phase I verification was conducted July 17-27, 2000. The Team Leader determined the best approach, considering the size and operational complexity of the contractor's scope of work, was to field three subteams: one for the business, budget, contracts and Department of Energy integrated safety management review; the second for a management integrated safety management review, and the third for a hazard integrated management review.

Discussion of Results

The purpose of this Phase I ISMSV was to verify the adequacy of the development of the M&O ISMS as described by the Description Document and supporting procedures, processes, and related documentation. The review was divided into four areas: Business, Budget, and Contracts; DOE; Management; and Hazard Identification and Control. Summaries, based on the results of those reviews are included within section 7.0 of this report. The detailed results for each of the objectives within those four ISMS areas are included in Volume II of this report.

This ISMSV identified an overarching Noteworthy Practice (NP) and some Opportunities For Improvement (OFI), with some Strengths and Issues identified for individual objectives. The Noteworthy Practice and Opportunities For Improvement were developed from consideration of the summations of the Strengths and Issues. The Noteworthy Practice and Strengths should be encouraged and developed. No Deficiencies were identified; however, the Opportunities For Improvement and Issues should be appropriately addressed.

YMSCO and the M&O have developed the M&O ISMS through considerable recent efforts and teamwork. During personnel interviews, the momentum of this total effort was evident as was the overall commitment to their responsibilities by both M&O line management and staff to ISMS and safety.

Worker involvement was formally embraced as the M&O's eighth principle of their ISMS. Considerable initiatives in the area of work control and worker involvement have been undertaken at the direction of the M&O General Manager. Most of these, such as the employee ESH committees, "Team Yucca," the Worker Bill of Rights, and Time Out for Safety, were identified as Strength's. *(ISMS Guiding Principle: Line Management is Responsible for Safety.)*

Many of the ISMS processes and procedures have only recently been developed and some are still being deployed. Overall, the M&O has developed an adequate ISMS Description, with sufficient supporting documentation, processes, and procedures. While these accomplishments have been considerable, the path to full ISMS implementation is also considerable and will be demanding. All of this will require the continued teamwork and sustained commitment to complete the task.

Within the framework of the seven ISMS Guiding Principles and five ISMS Core Functions, the ISMSV identified one Noteworthy Practice and some Strengths to leverage and utilize, and several Issues and Opportunities For Improvement to address. For example, (NP-1) the Workforce involvement at all levels in the development of the processes to support ISMS, work control, and safety programs is a significant asset. This constructive participation should be encouraged for all phases of implementation. Workers at all levels were also involved in work planning. This involvement should prove to be a significant asset to the ISMS implementation across all of the ISMS Guiding Principles and Core Functions.

Some Opportunities For Improvement are overarching within the YMP ISMS, based on identified issues. There is a need to clarify, improve, and ensure the adequate identification and agreement on requirements within the YMP. There is no single, integrated, formal process to identify, maintain, and fully integrate the set of applicable requirements from both DOE and external sources into the M&O policies, programs, and procedures. (OFI-1) This was identified and is discussed within some of the Issues reported in the areas of Hazards Identification and Control (DOE lacks a formal process that integrates with the M&O Standards and Requirements Identification Documents (S/RIDs), Management (training and execution of self-assessment programs), and the DOE (development and maintenance of "List B"). *(ISMS Core Functions: Define Scope of Work, Identify and Analyze Hazards, and Develop and Implement Controls.)*

Personnel must also have the necessary training and qualification to ensure that they have Competence Commensurate with their Responsibilities (CCR). The training system is undergoing initial deployment and continued development. Some areas have solid qualification process components such as the "Skill of the Worker" program. However, overall there were some training and qualification Issues identified that will provide areas for improvements in identification, integration, and documentation of training requirements. (OFI-5) These enhancements would improve the Training and Qualification processes to ensure that ISMS requirements are consistently met. *(ISMS Guiding Principle: Personnel Possess Competence Commensurate with Responsibilities.)*

YMSCO demonstrated leadership and its commitment to balancing priorities with the implementation of a new and strong process to develop the Fiscal Year (FY) 2001 budget. While this was recognized as a very good start, YMSCO and the M&O have already identified some improvements and lessons learned that are to be used to improve the process. This was a significant improvement over the processes that had been used in previous years to assist in defining the scope of work and balancing priorities to fully support the YMP ISMS. *(ISMS Core Function: Define Scope of Work, and ISMS Guiding Principle: Resource Allocations are Balanced, making ES&H a priority in project planning and execution.)*

Within the areas of Hazard Identification and Analysis and Develop and Implement Controls, there were some issues identified in addition to the training and requirements issues listed earlier. Because of that, the identification of external requirements into the hazard analysis may be incomplete, a major area for improvement. For example, there is not a process to determine when the safety basis should be modified to encompass other facilities. Additionally, a need was identified to link and integrate the job and safety/hazard analysis within the major procedures for Hazard Analysis and Work Control. Hazards analysis and work control processes should be fully integrated to support ISMS and work control. (OFI-4) *(ISMS Core Functions: Identify and Analyze Hazards, and Develop and Implement Controls, and ISMS Guiding Principles: Safety Requirements are Identified and Implemented, and Hazard Controls are Tailored to the Project Work.)* An asset to this area is the S/RIDs process and supporting web-based computer system that identifies requirements and its implementation mechanism.

As previously noted in NP-1, the workforce involvement at all levels was a significant asset for the development of the new work control processes. Similarly, some strengths that should have a positive affect on the performance of work were identified within the efforts of the Nuclear Culture Committee and in the execution of the M&O "Toolbox" process (although a need to develop a formal procedure for this process was also identified). Likewise, the safety efforts in programs such as "Team Yucca" and "Time Out for Safety" are significant assets. Other issues were also identified including the need to clarify the expectations and requirements of the new YMSCO Facility/Operations Permit procedure and with improvements in the Quality Assurance processes. *(ISMS Core Function: Perform Work Within Controls and ISMS Guiding Principle: Operations are Authorized Before Work Begins.)*

There is also is a need to for the M&O to develop a Quality Assurance Program that describes management and evaluation of the functions necessary to satisfy the requirements of DOE O 414.1A and its ten QA criteria. (OFI-3) *(ISMS Core Functions: Work is Performed Within Controls, and Feedback and Continuous Improvement)*

Within the area of Feedback and Continuous Improvement several areas were identified for possible improvement, principally the clarification of criteria, expectations, periodicity, and requirements; and the execution and DOE oversight of the M&O's assessment program. There are some Issues and Strengths within this area. For example, a strength in this area is the OCRWM Employee Concerns Program. However, while the M&O Occurrence Reporting Process System (ORPS) procedure is satisfactory, the M&O process has not been implemented in accordance with that procedure. Additionally, a need was identified to coordinate responses for lessons learned. (OFI-2) *(ISMS Guiding Principle: Feedback and Continuous Improvement.)*

The lack of a consistent control, distribution, change and review processes for documentation as identified as an issue. (OFI-6) Given that much of the ISMS documentation was developed and promulgated within the past few months (and some is being revised now), a solid system of documentation controls is necessary for ISMS implementation. Additionally, a process and a procedure need to be developed to maintain the ISMS Description Document and keep it, and the associated documentation, current and updated.

In summary, the M&O has developed an adequate ISMS Description Document with adequate supporting documentation, processes, and procedures. The path to full ISMS implementation will be demanding, will require continued teamwork, and sustained commitment.

Conclusions

The ISMSV Team recommends that the YMSCO Project Manager approve the M&O's ISMS Description Document. It is the team's expectations that the Opportunities for Improvement will be reviewed by YMSCO and formally dispositioned. It is recommended that the status of any corrective actions and improvements from this ISMSV report, as well as any modifications to the M&O's ISMS, be presented and briefed at the start of the ISMSV Phase II, which will evaluate the implementation of the ISMS at the YMP.

Deficiencies

None.

Opportunities for Improvement

OFI-1 YMSCO lacks a formal process to identify and maintain a set of applicable requirements, from both DOE and external sources, to ensure the integration of these requirements into M&O policies, programs, and procedures. (DOE.2-1, HAZ.2-5, HAZ.2-6)

OFI-2 Several areas for improvement were identified in the general area of Feedback and Continuous Improvement:

- Clear and consistent criteria, expectations, periodicity, and a method of validation need to be specified for self-assessment programs. (MG.3-3, MG.2-1)
- The degree of direct involvement that YMSCO maintains in the M&O's assessment program should be evaluated, and adjusted if necessary, to enable objective oversight of program effectiveness. (DOE.2-2)
- Improvements are required in the coordination of responses and corrective actions to lessons learned. (MG.3-1, MG.3-2)

OFI-3 Quality Assurance processes do not meet the requirements of DOE O 414.1A, Quality Assurance, and its ten QA criteria: Program, Personnel Training and Qualification, Quality Improvement, Documents and Records, Work Processes, Design, Procurement, Inspection and Acceptance Testing, Management Assessment, and Independent Assessment. (MG.2-1)

OFI-4 Hazard analysis and work control procedures should be fully integrated. YMSCO should specify criteria for its facility permit approval process.

- Procedure AP-ESH-008, Hazards Analysis System, is not integrated into the use of Skill of the Worker in procedure AP-OM-006, Work Request/Work Order Process. (HAZ.1-1)
- The Facility/Operations Permit Procedure, AP-OM-003 lacks criteria for permit approval and frequency for periodic evaluations by YMSCO. (DOE.1-1, HAZ.2-4)

OFI-5 The Training System, as defined, does not provide the appropriate integration with the M&O's management system (ESCN) to ensure the effective control for competence of workers. The components to enhance in the Training System are:

- The M&O Training System does not effectively account for employees due to its lack of integration with the ESCN Database. (MG.2-7)

- The Training Matrices lack a triggering mechanism that allows each current module to be identified. (MG.2-8)
- The Training System lacks an effective mechanism to continuously identify new applicable training requirements for new hires and existing employees. (MG.2-9)

OFI-6 The implementing procedures for Document Control lack certain required elements for a fully effective and functioning system. The needed elements are as follows:

- The M&O lacks a tiered structure for its documents. (MG.2-5)
- AP-5.1Q for YMSCO and the M&O does not require training requirements to be identified when developing implementing procedures. (MG.2-4)
- AP-6.1Q does not clearly specify a Responsible Manager's role for document distribution. (MG.2-3)
- AP-5.1Q for YMSCO and the M&O lacks a document review component in its document control system that would ensure consistent, periodic review. (MG.2-2)

Noteworthy Practices

NP-1 Workforce involvement, at all levels, in the development of processes to support ISMS, work control, and safety programs is a significant asset.

- The "Team Yucca" and "Hazards Elimination and Action Team" committees demonstrate the M&O's team approach to safety. (HAZ.1-S-2)
- The "Worker Bill of Rights," which encourages employees to exercise their right to stop work whenever they believe all hazards have not been properly addressed, conveys the written policy that safety is management's top priority. (HAZ.1-S-4)
- The "Time Out for Safety/Stop Work Authority Program" has greatly enhanced employees' ability to have a direct impact on their work environment. (MG.3-S-1)

1.0 INTRODUCTION

Department of Energy (DOE) P 450.4, *Safety Management System Policy*, commits to the institutionalization of an ISMS throughout the DOE complex. The DOE Acquisition Regulations (DEAR 48 CFR 970.5204-2 and -78) require contractors to manage and perform work in accordance with a documented, site-specific ISMS. Guidance and expectations for ISMS implementation were provided to the M&O contractor, TRW Environmental Safety Systems Inc., Contract DE-AC-08-91RW00134, in the Integrated Safety Management Plan, DOE/RW-0523. The ISMS requirements of 48 CFR 970.5204-2 and -78 have been incorporated into the M&O contract (Contract DE-AC01-91RW00134). The contract requires the M&O contractor to submit their documented ISMS Description to YMSCO for approval by DOE. The M&O contractor submitted the initial ISMS Description to YMSCO on July 6, 2000.

DOE approval of the M&O contractor ISMS Description is dependent on the results of this verification.

The ISMSV, Phase I, was a review of the adequacy of the documented ISMS Description, including supporting ES&H system documents, in fulfilling the requirements of the ISM DEAR clauses, the DOE Directives contained in the contract, and the DOE ISM Policy. The ISMSV was sponsored by the YMSCO Project Manager and will be performed in accordance with the protocol outlined in the DOE HDBK 3027-99, *Integrated Safety Management System Verification Team Leader's Handbook*, and the Integrated Safety Management Plan, DOE/RW-0523.

2.0 PURPOSE

The purpose of the Phase I ISMSV was to provide the YMSCO Project Manager with a recommendation regarding the approval of the M&O contractor's ISMS, based on the requirements of 48 CFR 970.5204 (-2 and -78), DOE P 450.4, and DOE P 450.5. A secondary purpose was to evaluate the role of DOE in support of the contractor's ISMS.

3.0 SCOPE

> *The Department and Contractors must systematically integrate safety into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment. This is to be accomplished through effective integration of safety management into all facets of work planning and execution. In other words, the overall management of safety functions and activities becomes an integral part of mission accomplishment*. DOE P 450.4

The scope of the Phase I ISMSV was to verify that the M&O contractor has met the letter and intent of DOE P 450.4 in its ISMS Description, supporting processes, and documentation. This was accomplished through evaluation of the ISMS Description, including the supporting documents and ES&H systems for the site, to determine whether it meets the requirements of 48 CFR 970.5204 (-2 and -78). To successfully accomplish this verification, the team evaluated how the M&O procedures, policies, and manuals are implemented at the upper level of management including detailed discussions with key management personnel. In assessing the adequacy of the M&O ISMS Description document, the Phase I ISMSV considered self-assessments, gap analyses, corrective action plans, and ISM implementation plans. By reviewing supporting processes and mechanisms, documents, corrective actions, and implementation plans, the team was able to draw conclusions as to the adequacy of the M&O contractor's ISMS to be implemented. This approach also assessed the adequacy of the implementing and integrating mechanisms of ISMS. The scope of the review at the YMSCO included all nine Phase I Core Expectations.

YMSCO has worked with the M&O contractor to establish an ISMS. The site requested verification by the YMSCO Project Manager through the submittal of the deliverable SSSP02M3, the M&O report of readiness for Phase I verification: LV.ISM.JAD.06/00-013, June 1, 2000 from George Dials to J. Russell Dyer. In addition to the M&O contractor's ISMS documentation, processes, and mechanisms, the team reviewed the implementation of YMSCO's responsibilities related to ISM. YMSCO's ISM-related functions, responsibilities, and authorities are delineated in the OCRWM Safety Management Functions, Responsibilities and Authorities Manual (DOE/RW-0521, Jan. 14, 2000), the Project Management Plan (YMP/CC-0028, September 1999), the YMP Integrated Safety Management Plan (DOE/RW-0523), and Draft AP-1.19Q Organization.

4.0 PREREQUISITES

The M&O contractor was requested to provide access for ISMSV team members to all site facilities, ongoing projects and work activities, contractor personnel for interview, and pertinent documents and records. The team requested, and was provided, formal presentations by appropriate M&O and YMSCO management and staff, to explain the ISMS Description Document, its structure, and how it operates. The presentations included information on supporting documentation and processes, the ISMS and ES&H document hierarchy; contractor and DOE organization; and key roles, responsibilities, authorities, and interfaces related to ISMS implementation. These presentations were made during the team's ISMSV site pre-visit.

5.0 REVIEW APPROACH

DOE HDBK 3027-99, *ISMS Verification Team Leader's Handbook*, presents core expectations derived from the guiding principles and core safety functions of the DOE's ISM policy. These core expectations were employed in this ISMSV.

Phase 1 ISMS Core Expectations:

1. The ISMS documentation is consistent with DOE P 450.4, the DEAR, and the guidance provided to the contractor by the Approval Authority. (CE I-1)

2. DOE and the contractor effectively translate mission into work, set expectations, provide for integration, and prioritize and allocate resources. (CE I-2)

3. An ISMS should include methods for identifying, analyzing, and categorizing hazards. (CE I-3)

4. An ISMS should include methods for establishing and maintaining an agreed-upon set of safety standards before work is performed. (CE I-4)

5. Contractor policies, procedures, and documents are established and are adequate for the work or process to be performed safely. (CE I-5)

6. The ISMS should be continuously improved through an assessment and feedback process, which should be established at each level of work and at every stage in the work process. (CE I-6)

7. The ISMS should establish that at every level of control, line management must be responsible for safety. Clear and unambiguous roles and responsibilities should be defined and maintained at all levels within the organization. (CE I-7)

8. The ISMS should ensure that personnel are competent commensurate with their responsibility for safety. (CE I-8)

9. The DOE Approval Authority should have a set of processes that interfaces efficiently and effectively with the contractor organization. (CE I-9)

This ISMSV made use of the Criteria Review and Approach Documents (CRADs) presented in Appendix 2 of DOE HDBK 3027-99, *ISMS Verification Team Leader's Handbook*. The CRADs were developed to facilitate evaluation of an ISMS Description and supporting documentation and processes against the core expectations. For this verification, the Handbook's CRADs were used with some modification and consolidation. Due to the current Yucca Mountain Project's (YMP) size and complexity of operation, modification of the CRADs was appropriate and consistent with the graded approach discussed in the DOE Handbook. The CRADs were organized as follows:

BBC.1 DOE and contractor procedures ensure that missions are translated into work, expectations are set, tasks are identified and prioritized, and resources are allocated. (CE I-2, CE I-6, CE I-7, CE I-9)

BBC.2 DOE and contractor budgeting and resource assignment procedures include a process to ensure application of balanced priorities. Resources are allocated to address safety, programmatic, and operational considerations. Protecting the public, workers, and environment is a priority whenever activities are planned and performed. The contractor procedures and practices ensure that personnel who define the scope of work and allocate resources have competence commensurate with the assigned responsibilities. (CE I-2, CE I-7, CE I-8)

DOE.1 DOE has established processes that interface efficiently and effectively with the contractor's organization to ensure that work is performed safely. (CE I-7, CE I-8, CE I-9)

DOE.2 DOE has established processes that interface efficiently and effectively with the contractor's organization to provide feedback and continuous improvement. Feedback information on the adequacy of controls is gathered, opportunities for improving the definition and planning of work are identified and implemented, line and independent oversight is conducted, and, if necessary, regulatory enforcement actions occur. (CE I-6, CE I-7, CE I-8, CE I-9)

HAZ.1 Hazards associated with the work are identified, analyzed, and categorized. Contractor procedures ensure that contractor personnel responsible for analyzing the hazards and developing, reviewing, or implementing the controls, have competence that is commensurate with their responsibilities. DOE roles and responsibilities are clearly defined to ensure appropriate oversight and review of the analysis of hazards and the identification of controls. Personnel shall posses the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities. (CE I-3, CE I-7, CE I-8, CE I-9)

HAZ.2 Applicable standards and requirements are identified and agreed upon. (CE I-4, CE I-9)

MG.1 The ISMS Description is consistent and responsive to DOE policies 450.4, 450.5, and 450.6; the DEAR; and the direction to the contractor from the Approval Authority. The contractor policies and procedures ensure that the ISMS Description is maintained, implemented, and that implementation mechanisms result in integrated safety management. (CE I-1)

MG.2 Contractor roles and responsibilities are clearly defined to ensure satisfactory safety, accountability and authority. Line management is responsible for safety. Competence is commensurate with responsibilities. (CE I-7, CE I-8)

MG.3 Feedback information on the effectiveness of the ISMS is gathered, opportunities for improvement are identified and implemented, line and independent oversight is conducted, and, if necessary, regulatory enforcement actions occur. (CE I-6, CE I-7, CE I-8)

MG.4 Contractor procedures provide a method to ensure that controls are implemented during preparation for the initiation of work at each level. The procedures ensure that adequate controls are identified to mitigate the identified hazards and the controls are effectively implemented. Contractor procedures provide assurance that controls will remain in affect so long as the hazards are present. (CE I-5, CE I-7, CE I-8**)**

Each CRAD provided the stated objectives for the applicable systems and processes, the criteria for determining if the systems and processes satisfy the objectives, the applicable documents to be reviewed, personnel to be interviewed, and work activities to be observed in carrying out the verification. An ISMSV Assessment Form was prepared by the ISMSV team, corresponding to each CRAD, which documents the results of the document reviews, interviews, and work observations, and cites resulting issues and strengths.

The Verification Team was divided into three functional area subteams, each comprised of subject matter experts with technical backgrounds and experience in the relevant field as well as ISM knowledge. The subteams were Business, Budget, and Contracts (BBC) and DOE, Management (MG), and Hazards Identification and Standards Selection (HAZ).

6.0 ADMINISTRATION

6.1 Team Composition

Thomas M. McDermott, Industrial Hygienist, Safety and Technical Services of the Chicago Operations Office, was appointed to serve as the Team Leader for the YMP M&O Contractor Phase I ISMS Verification by Russell Dyer, YMP Project Manager. The Director of the Department's Safety Management Implementation Team (SMIT), certified Mr. McDermott as an ISMS Verification Team Leader.

Team members were selected based on the following criteria established in the DOE *ISMS Verification Team Leader's Handbook*:

- knowledge, understanding, and training on Integrated Safety Management,
- established expertise in one or more functional areas,
- appraisal experience, and
- familiarization with the site/facility mission and processes.

Team qualifications were reviewed by the Team Leader and documented in the Qualification Summaries provided in Volume II of this report.

6.2 Preparation

Preparation is considered vital to producing a robust, credible verification. Team members were required to prepare for the ISMSV through the following:

1. Read/study:
   - The YMSCO ISMS Verification Plan
   - DOE P 450.4, *Safety Management System Policy*
   - DOE P 450.4-1, *Safety Management System Policy Guide, Volume 2*
   - DOE *ISMS Verification Team Leader's Handbook*
   - The Integrated Safety Management Plan, DOE/RW-0523
   - The CRWM M&O Integrated Safety Management System Description, effective July 5, 2000, PGM-CRW-AD-000001
   - Integrated Safety Management Systems (ISMS) Internal Assessment of the DOE YMSCO, Final Report, May 31, 2000
   - Integrated Safety Management Internal Assessment CRWMS M&O Report and Resolutions, Volume I
   - The Office of Environment, Safety and Health Oversight, Focused Review of the Yucca Mountain Project

2. Attend a presentation of the DOE ISMS training course.

3. Attend site-specific orientation, site tour, and applicable safety training.

6.3 Schedule

The ISMSV Team Leader, in conjunction with the YMSCO Project Manager and representatives of the M&O contractor, established the duration and the dates of the verification. The schedule for the Phase I ISMSV was as follows:

- Pre-verification site visit: June 19-23, 2000
  The ISMSV team members received site-specific training, the 2-hour DOE ISMS training course, and presentations from the M&O and YMSCO regarding the contractor scope of work, organizational structure, and ISM/ES&H systems hierarchy.

- Phase I ISMSV: July 17-27, 2000

6.4 Process

The Phase I ISMSV was conducted to ascertain adherence to, and application of, the core functions and guiding principles of ISM, using the criteria set forth in the CRADs. The team evaluated the adequacy of the documented ISMS Description, supporting documents, and the implementing and integrating mechanisms of the ISMS. Emphasis was placed on demonstrating how the ISMS integrates ES&H into business practices and how these practices flow down to all organizational levels. The integration of line and support organization functions was examined. This verification did not include task-level execution, worker-level implementation, or functional area compliance.

During the verification, a review of the role of DOE in support of the contractor's ISMS and YMSCO's management of mission programs and certain key ISM functions was conducted. Specific areas and DOE/contractor interfaces were evaluated, including operations, authorization, and oversight, as well as YMSCO's role in translating missions into tasks, setting expectations and priorities, evaluating performance, and allocating resources.

The ISMS was verified through evaluation of information gathered by review of DOE and M&O documents and records, interviews of personnel at the appropriate levels from management to staff (both scientific and operations support personnel, as appropriate), and observation of ongoing management activities. Any gaps in the M&O's ISMS, or other concerns with integration of the ISM principles and functions within the M&O's ISMS, were documented as issues at the individual CRAD level. Conversely, any ISMS process, mechanism, or document that demonstrates a sound application and a high degree of integration of the ISM principles in performing the ISM core functions was documented as a strength at the individual CRAD level.

A factual accuracy review as to the content and conclusions of the verification report was concurrent with the development of the recommendation and finalization of the report. A schedule and associated milestones for the development and finalization of the recommendation and report was developed and agreed on by YMSCO and the M&O and is attached as an appendix to the Review Plan in Volume II of this report.

Each ISMSV team member assessed their assigned areas of the M&O's ISMS to determine where issues and strengths exist.

The team collectively binned issues and strengths documented in the individual CRADs against the core functions and guiding principles to define deficiencies, opportunities for improvement, and noteworthy practices. Individual team members were assigned responsibilities by core function for working with the senior technical advisor and the subteam leaders in identifying and refining deficiencies, opportunities for improvement, and noteworthy practices. For the purpose of this verification, the following definitions were used to categorize an issue or strength.

> **Deficiency**: The ISMS Description and supporting documentation does not include/address an ISMS element; or the ISMS mechanisms can not demonstrate in the documented processes and procedures how ES&H and applicable directives, policies, and requirements are integrated into its business practices.
>
> **Opportunity for Improvement**: The ISMS Description and the documented processes or procedures do not adequately address the ISMS core safety functions and guiding principles, or integration of ES&H within its business practices needs strengthening to demonstrate effective integration of the ISMS mechanisms that address the core functions and guiding principles at the appropriate work or planning level.
>
> **Noteworthy Practice**: An exemplary process for integrating and illustrating an element of ISM that merits dissemination across the DOE complex as a positive lesson learned.

On July 27, 2000, the ISMSV Team Leader presented a briefing on the verification results to the YMSCO Project Manager and the M&O management and staff. The exit briefing identified any deficiencies, opportunities for improvement, and noteworthy practices found during the performance of the Phase I ISMSV. The final report of the ISMSV was submitted to the YMSCO Project Manager.

7.0 SUMMARY OF RESULTS

7.1 Business, Budget, and Contracts ISMS Review

The DEAR Clause 970.5204-2, requiring the M&O to implement the principles and functions of Integrated Safety Management into all activities, has been incorporated into the contract. The

integration of ES&H became particularly challenging due to the number of subcontractors brought together to work as a team and execute the mission. As a result of the M&O's desire to closely integrate the work activity under the contract, a special provision was added to each of the individual subcontract arrangements. The special provision requires each subcontractor performing work on the project to follow the plans, policies, and procedures of the M&O's ISMS Description Document. Work performed for the Yucca Mountain Project M&O at other DOE facilities shall follow the ISMS for that facility.

YMSCO and the M&O have established complementing procedures for using a risk-based prioritization process for defining work, scheduling, and allocating resources. These procedures, though only recently implemented, are noteworthy because they provide management with quality information to assist them in making funding decisions. The success of management's efforts can be evaluated by the less than 5% difference between the M&O's recommended ranking and DOE's final ranking of work activity for FY 2001. The same process is used for reviewing and approving change requests to the project baseline scope, schedule, and budget.

A key aspect of the risk-based prioritization process is management's involvement. Similar processes for both the M&O and YMSCO involve an assigned lead person to staff each proposed work package, resolve comments, apply the risk matrix, and defend the relative ranking of all work activity before the senior managers of their respective organizations. Senior managers, within both organizations, collectively receive the results of the ranking process, raise questions, and challenge rationale. Involving senior management in the process of vetting the ranking of all work activity is the single biggest benefit of the overall integrated, risk-based prioritization process.

Upon completing the prioritized ranking, YMSCO issues final program guidance and amends the contract to reflect the agreed upon scope, schedule, and budget.

Concurrent with the development of the final prioritized scope of work, the parties also develop a set of incentivized performance measures that serve as the basis for evaluating the M&O's performance. The annual Performance Evaluation and Measurement Plan (PEMP) consists of a few critical quantitative, mission-related, performance-based objectives and a number of qualitative self-assessment expectations.

In summary, the ISMS Description Document enables the M&O to integrate the principles of ISM with mission needs into a prioritized work scope, schedule, and budget.

7.2 DOE ISMS Review

The YMSCO Project Manager and staff members have made progress in developing an approach for implementing ISMS in a relatively short period of time. It should be noted that many of the descriptive and implementing documents have been recently developed and were undergoing refinement at the time of this assessment.

To address previously identified problems, YMSCO has chosen to develop procedures that include duties of YMSCO and the M&O contractor. While this shared procedure methodology has resulted in an increased level of control of the M&O by YMSCO, an issue presenting vulnerability was also identified. The degree to which YMSCO has chosen to actively manage the M&O ES&H assessment program jeopardizes the ability of YMSCO to perform objective oversight of the effectiveness of the program or to hold the M&O accountable for the performance of the assessment program.

Roles, responsibilities, authorities and accountabilities are sufficiently defined through the OCRWM FRAM so that the YMSCO personnel can conduct their project control and oversight functions. Additionally, new procedure AP 1.19Q is being developed to provide additional clarity to the identification of roles and responsibilities.

Processes exist to ensure the competence of YMSCO staff is commensurate with assigned responsibilities. YMSCO has determined there is little value in instituting a facility representative qualification program at this time, given the nature and simplicity of current site work. YMSCO also foresees that a facility representative program will be necessary in the future, as physical work and its complexity increase in the future. Individual Development Plans (IDPs) are used to identify opportunities for enhancing staff competence.

The identification of safety requirements by YMSCO, and the contractual flowdown of those requirements, needs management attention. As allowed by DOE Acquisition Regulations DEAR, no List A, compiling external requirements, was appended to the M&O contract. However, there is currently no approved procedure or encompassing process at YMSCO for the identification of applicable external requirements. Additionally, List B, which is appended to the contract, contains several inconsistencies, such as the inclusion of Guides with no explanation of applicability, Orders with no Contractor Requirement Document, and unresolved issues regarding a previously directed change.

The OCRWM Concerns Program, managed by YMSCO, is a strength. The Concerns Program is fully implemented, and appears to meet U. S. Nuclear Regulatory Commission expectations. Additionally, employees actively use the Program which is a positive indicator of the open work environment YMSCO has developed.

YMSCO has taken an active role in leading the effort for building the foundation for the integrated safety management system. Overall, necessary processes exist and are described by procedures. YMSCO's continuing leadership, and good teamwork with the M&O contractor, will be necessary to realize full implementation of the developed ISMS processes. This leadership will also be essential to ensure continuation of ISMS implementation during and after contract transition.

7.3 Management ISMS Review

The ISMS Description is consistent and responsive to DOE Polices 450.4, 450.5, and 450.6; the DEAR; and the direction to the M&O contractor from the Approval Authority, DOE-YMSCO. DOE and the M&O contractor have collaborated to develop policies and procedures that implement the five core functions and seven guiding principles. The contractor procedures and policies ensure that the ISMS Description is maintained, implemented, and that the implementation mechanisms result in integrated safety management.

DOE developed and uses its ISM Plan to define and control the requirements of the CRWM Program ISM System. DOE developed and uses its PEMP to: incentivize and monitor M&O performance, including implementation of the ISM system; communicate its ISM expectations to the M&O; and evaluate the M&O's performance during the associated evaluation period. DOE and the M&O meet regularly at a Monthly Performance Review during which DOE provides immediate feedback to the M&O on performance effectiveness.

DOE and M&O management is committed to feedback and improvement at all levels of the organization; equally, personnel at all levels of the organization recognize the importance of the ISMS and are specifically committed to feedback and continuous improvement. Civilian Radioactive Waste Management documents including program description, policies, procedures, and work instructions have been developed to meet the principles of feedback and improvement. Specific requirements related to management and independent oversight, lessons learned, tracking and trending, training, self-assessments, performance indicators, and performance measures have been developed and initiated.

A significant change in the safety culture has occurred since the initiation of the Nuclear Safety Culture and ISMS initiatives. As a result of this change, the commitment to feedback and continuous improvement was evident during the interview and observation process. Two important indicators demonstrate this commitment: the "Time Out for Safety/Stop Work Authority Program" and the Nuclear Safety Committee.

The M&O ISMS Description Document and implementing documents provide for unambiguous lines of authority and identify line management's responsibility for ensuring safety throughout the organization. This has been achieved through the development of Draft AP-1.19Q, Organization, functional position descriptions, and the delineation of roles in both DOE and M&O implementing procedures. Both DOE and the M&O use implementing procedures as a critical method for transmitting roles and responsibilities to all personnel. In general, employees have embraced the ISM philosophy that enforces the use of these implementing procedures throughout DOE-YMSCO and the M&O organization.

The Physical Work Planning and Control Process, AP-SC-001, describes the roles and responsibilities, as well as requirements for the physical work planning and control process from the annual plan to the execution of work at YMP by the M&O. Annually, planning of work and integration of work controls is initiated by DOE developing a program work breakdown structure. Upon finalization of the DOE program work breakdown structure, the M&O uses several integrated processes to develop plans and schedules, and further define levels of work scope into projects, tasks, work instructions, and work orders.

Furthermore, the Work Request/Work Order Process, AP-OM-006, defines the roles and responsibilities for preparing work orders to maintain physical assets in a condition suitable for their intended use. A key strength of this process is the active involvement of craft and workers, line management, and technical support personnel in the development of the work order. Another strength of this process is that the first review and approval signature on the work order is the craft foreman and the person performing the work. The approved and completed work order authorizes the work and the supervisor/foreman provides the work order to the work performers during a pre-work briefing. M&O processes require responsible managers to ensure that trained and qualified personnel are actively involved so that ES&H considerations are incorporated into the design, review, and authorization of work orders.

The M&O is enhancing its Training Program to ensure that personnel receive the appropriate training to conduct work safely through the implementation of a comprehensive hiring process and qualification program.

Although this review identified issues in the areas of Training, Lessons Learned, Self-Assessment, and Document Control, the Management Subteam concluded that the ISMS Verification Plan objectives have been met.

7.3.1 ISMS Description

The ISM Description is consistent and responsive to DOE Policies 450.4, 450.5, and 450.6; the DEAR; and the direction to the M&O contractor from the Approval Authority, DOE-YMSCO. DOE-YMSCO and the M&O contractor have collaborated to develop policies and procedures that implement the five core functions and seven guiding principles. The M&O contractor has added an eighth guiding principle, worker involvement, in recognition that this is a key element in doing work safely. (MG.1-S-1) The contractor procedures and policies ensure that the ISMS Description is maintained, implemented, and that the implementation mechanisms result in integrated safety management.

DOE-YMSCO developed and uses its ISM Plan to define and control the requirements of the CRWM Program ISM System. Additionally, DOE-YMSCO developed and uses its PEMP to incentivize and monitor M&O performance, including implementation of the ISM system. DOE-YMSCO uses the PEMP to communicate its ISMS expectations to the M&O. The M&O then trains all employees on ISMS. Also, the M&O assigns responsibilities for maintenance of the ISMS to the M&O ES&H organization. This organization is responsible for updating the ISM System Description for DOE approval on an annual basis as required by the DEAR. However, the M&O does not currently have a formal process for updating the ISMS Description. (MG.1-1)

The M&O contractor has adequately described the procedures that establish, document, and implement the safety performance objectives, performance measures, and commitments consistent with and in response to DOE's processes and budget execution guidance and direction as required by the DEAR. The DOE-YMSCO uses the PEMP as the vehicle for transmitting its performance indicators to the M&O contractor. DOE uses the PEMP to evaluate the M&O's performance during the associated evaluation period. When the PEMP is completed and agreed to by DOE-YMSCO and the M&O, the M&O develops the performance measures that support the performance indicators in the PEMP. The M&O then feeds the performance measures and accomplishments back to DOE-YMSCO through the PEMP and the Monthly Performance Review (MPR). At the end of the MPR, DOE-YMSCO provides immediate feedback to the M&O on the effectiveness of their performance.

7.3.2 Roles, Responsibilities, Authority, and Accountability

The M&O's Integrated Safety Management Description Document and implementing documents provide for unambiguous lines of authority and identify line management's responsibility for ensuring safety throughout the organization. The completion of Draft AP-1.19Q will further clarify YMSCO and M&O responsibilities. This will be achieved by indicating the major activities for line management positions along with a listing of duties for each of these primary activities. In addition, the creation of a Quality Assurance Plan will demonstrate how the ten QA criteria from DOE O 414.1A will be satisfied along with how the quality assurance criteria will be implemented in a manner sufficient to achieve adequate protection of the workers, the public, and the environment. (MG.2-1)

YMSCO and the M&O further define roles and responsibilities through the creation of Functional Position Descriptions as part of the Human Resources process. These descriptions have been developed for line management and are continuing to be developed for the rest of the organization. The M&O also relies on the employee Performance Appraisal process to continually assign and review goals on a semi-annual basis.

YMSCO and M&O implementing procedures also supply detailed roles for employees based on the position held. Since procedures are a vital method for transmitting roles and responsibilities, it is imperative that the Document Control Program procedures be effective and well understood by all employees. Several document control features have been identified as lacking within the current YMSCO/M&O Document Control Program (MG.2-2, MG.2-3, MG.2-4, and MG.2-5). Employees have embraced the ISMS philosophy that enhances the use of implementing procedures throughout the organization thereby delineating employee roles and responsibilities.

7.3.3 Competence Commensurate with Assigned Responsibilities

The M&O is enhancing the training program to ensure that personnel are appropriately trained prior to the commencement of work. The M&O uses the Hiring Process as its initial system to ensure employees have the competence necessary to perform assigned duties. The Hiring Process is a mature system and M&O Management has received both classroom and computer based training on the subject matter. Once employees are activated with the M&O, they are accounted for on the Employee Status Change Notice (ESCN) system which feeds the Organizational Profiler. The ESCN is vital to the management of several M&O business systems. Currently, the ESCN lacks integration with the Training Department's Database. (MG.2-7) The linkage of these systems would provide a quality check mechanism between the M&O's active personnel roster and an employee's corresponding individualized training profile. The M&O's Training Department is in the deployment phase for Training Matrices and, due to this program's immaturity, some training gaps still exist within the system. The review identified several issues regarding the M&O's capability to ensure that personnel are properly trained prior to the commencement of work, when their scope of work changes, and when applicable new requirements and/or hazards are identified. (MG.2-8, MG.2-9) The Training Department provides Responsible Managers with a monthly status report that helps ensure that an individual receives the proper training in order to perform work safely.

7.3.4 Feedback and Improvement

DOE-YMSCO and M&O management is committed to feedback and improvement at all levels of the organization. Personnel at all levels of the organization recognize the importance of the ISMS and are specifically committed to feedback and continuous improvement. CRWM documents including program description, policies, procedures, and work instructions have been developed to meet the principles of feedback and improvement. Specific requirements related to management and independent oversight, lessons learned, tracking and trending, training, self-assessments, performance indicators, and performance measures have been developed and initiated.

A significant change in the safety culture has occurred since the initiation of the Nuclear Safety Culture and ISMS initiatives. As a result of this change, the commitment to feedback and continuous improvement was evident during the interview and observation process. Two important indicators demonstrate this commitment: the "Time Out for Safety/Stop Work Authority Program" and the Nuclear Safety Committee.

The "Time Out for Safety/Stop Work Authority Program" has greatly enhanced the employees' ability to a have direct impact on the safety of the environment in which all employees work.

The Nuclear Culture Committee is of note for its dedication to changing the culture and educating the employee population. This committee has developed the Nuclear Culture News, a publication that effectively communicates the objectives of ISMS. They have also developed the "Commitment to Excellence Handbook" which provides each employee with a clear vision of Yucca Mountain Project Management in meeting the requirements of operating in a nuclear environment.

Three issues where identified during the review process. In the area of Lessons Learned there is no requirement for Coordinators to provide verification that they have evaluated the lesson learned or to provide a response if the lesson learned is not applicable to their work environment. This could lead to lessons learned not being evaluated and/or appropriate corrective actions not being implemented.

In addition, in the current process each coordinator independently determines if the lessons learned are applicable to a specific area of responsibility. However, there is no process in place for integrating responses and checking for credible and consistent corrective actions throughout the project.

The objective of the Self-Assessment process is to evaluate ongoing work activities to identify conditions that impact the organization, such as achieving their objectives. OCRWM's Self-Assessment process is defined in the Self-Assessments Procedure, AP-2.20Q. This procedure does not provide clear or consistent criteria for the conduct of a self-assessment. The process does not require the Responsible Manager to initiate self-assessments when negative trends are identified in their area of responsibility, or when major process changes have occurred. These are two key areas where self-assessment could provide vital feedback and an opportunity for improvement in a specific area. In addition, there is no current method to verify the quality, validity, or effectiveness of the self-assessment.

The ISMS program has received high visibility and significant management support. The number of feedback methods developed to ensure the program meets expectations has greatly enhanced the opportunity for success.

7.3.5 Work Control

The Physical Work Planning and Control Process, AP-SC-001, describes the requirements and responsibilities for the physical work planning and control process from the annual plan to the execution of work at YMP by the M&O. The process encompasses three functions of physical work planning (defining the scope of work, analyzing hazards, and developing/implementing controls) and two functions of work implementation (performing work and feedback/improvement).

Annually, the planning of work and integration of work controls is initiated by DOE developing a program work breakdown structure. Upon finalization of the DOE program work breakdown structure, the M&O uses several integrated processes to develop plans and schedules and further define levels of work scope into projects, tasks, work instructions, and work orders. M&O processes require responsible managers to ensure that trained and qualified personnel are actively involved to ensure ES&H considerations are incorporated into the design, review, and authorization of work orders.

The work package process interfaces with the design control process to ensure that design and design changes, from conceptual design to final design, are defined, controlled, verified and, as applicable, approved and revised. The relevant procedures are AP-3.13Q for permanent configuration design and LP-OM-019-M&O for field design control of field engineering technical documents.

Project engineers work with scientists during the development of testing work packages to coordinate several M&O required reviews. The Testing Work Packages Procedure, AP-5.2Q, establishes the responsibilities and processes to initiate, develop, review, approve, issue, revise, and document Field Work Packages and Laboratory Work Packages.

The Work Request/Work Order Process, AP-OM-006, describes the responsibilities and process for identifying, performing, and documenting work on physical assets, and for test control activities. The scope of this procedure includes: requesting work; troubleshooting; work order planning, implementation, closeout, and revision; emergency work; standing work orders; and work order cancellation. The work request/work order process is an important element of the work management system to maintain physical assets in a condition suitable for their intended use. A key element and strength of this process is the active involvement of craft and workers, line management, and technical support personnel in the development of the work order and its process for execution. Another strength of this process is that the first review and approval signature on the work order is the craft foreman and the person performing the work. (MG.4-S-1)

7.4 Hazard Identification and Control ISMS Review

The M&O developed two main mechanisms that effectively identify and analyze environment, safety, and health hazards associated with the YMP. These mechanisms effectively integrate hazard analysis into work control procedures to ensure that the appropriate levels of control are established that are specific to the particular hazards of the Yucca Mountain Project and its work activities.

AP-ESH-004, Occupational Safety and Health Program, and YMP/93-04, Environmental Management Plan, apply to both DOE and the M&O. These documents require the identification, analysis, and categorization of all hazards associated with the site. AP-ESH-004 requires the DOE Project Manager and the M&O General Manager to ensure that safety and health requirements, including those of ISM, are implemented throughout the organization through a documented program. YMP/93-04 requires DOE to conduct assessments, surveillances, and inspections; and verify compliance with environmental regulations. These programs assign environment, safety, and health responsibilities at all operational levels at the Yucca Mountain Project.

AP-OM-006, the M&O's main work control procedure for developing work packages for testing, construction, and operations, including developing detailed work instructions, requires hazard analysis and control using AP-ESH-008 (safety and health) and AP-EM-002 (environmental compliance). These procedures integrate hazard analysis and control into work planning and provide the means to ensure that hazard controls are employed prior to work being authorized. The procedures provide rigor by containing comprehensive checklists and requiring reviews by the appropriate environment, safety, and health subject matter experts; were developed with strong worker involvement; and reflect lessons learned from experience with past work planning procedures.

The M&O's Environment, Safety, and Health Training and Qualification Program, and Indoctrination and Training of Personnel procedures provide the mechanisms to ensure that workers at all levels (planners, subject matter experts, craft workers, and others) have the appropriate competencies to identify and control work hazards.

Strong worker involvement is provided through the use of standing environment, safety, and health committees such as Team Yucca and Hazard Elimination Action Team that allow for significant participation by all workers both at the site and in the office environment in hazard analysis and fostering feedback through open communications. The M&O's "Worker Bill of Rights" including stop work authority is an exemplary form of worker involvement.

The M&O conducted a categorization and analysis of environment, safety, and health hazards in accordance with DOE guidance at the Exploratory Studies Facility at YMP. This analysis classified the Exploratory Studies Facility as an "other industrial facility" and provides, through a related procedure, a mechanism to monitor and approve changes to its safety basis.

The M&O developed a robust computer-based system to manage the DOE environment, safety, and health Directives. This S/RID process provides a means to identify responsible managers and the implementing mechanism for each requirement. The M&O processes for identifying external requirements and providing for changes in implementing procedures due to changed requirements are not well integrated. DOE has not developed integrated processes to ensure that the current DOE Directives are maintained in the M&O's contract and that the applicable external ESH requirements have been identified. DOE provides, through its oversight program, that the appropriate hazard analysis and controls are conducted.

8.0 DEFICIENCIES

None.

9.0 OPPORTUNITIES FOR IMPROVEMENT

OFI-1 YMSCO lacks a formal process to identify and maintain a set of applicable requirements, from both DOE and external sources, to ensure the integration of these requirements into M&O policies, programs, and procedures. (DOE.2-1, HAZ.2-5, HAZ.2-6)

OFI-2 Several areas for improvement were identified in the general area of Feedback and Continuous Improvement:

- Clear and consistent criteria, expectations, periodicity, and a method of validation need to be specified for self-assessment programs. (MG.3-3, MG.2-1)
- The degree of direct involvement that YMSCO maintains in the M&O's assessment program should be evaluated and adjusted, if necessary, to enable objective oversight of program effectiveness. (DOE.2-2)
- Improvements are required in the coordination of responses and corrective actions to lessons learned. (MG.3-1, MG.3-2)

OFI-3 Quality Assurance processes do not meet the requirements of DOE O 414.1A, Quality Assurance, and its ten QA criteria: Program, Personnel Training and Qualification, Quality Improvement,

Documents and Records, Work Processes, Design, Procurement, Inspection and Acceptance Testing, Management Assessment, and Independent Assessment. (MG.2-1)

OFI-4 Hazard analysis and work control procedures should be fully integrated. YMSCO should specify criteria for its facility permit approval process.

- Procedure AP-ESH-008, Hazards Analysis System, is not integrated into the use of Skill of the Worker in procedure AP-OM-006, Work Request/Work Order Process. (HAZ.1-1)
- The Facility/Operations Permit Procedure, AP-OM-003 lacks criteria for permit approval and frequency for periodic evaluations by YMSCO. (DOE.1-1, HAZ.2-4)

OFI-5 The Training System as defined does not provide the appropriate integration with the M&O's management system (ESCN) to assure the effective control for competence of workers. The components to enhance in the Training System are:

- The M&O training system does not effectively account for employees due to its lack of integration with the ESCN Database. (MG.2-7)
- The training matrices lack a triggering mechanism that allows each current module to be identified. (MG.2-8)
- The training system lacks an effective mechanism to continuously identify new applicable training requirements for new hires and existing employees. (MG.2-9)

OFI-6 The implementing procedures for Document Control lack certain required elements for a fully effective and functioning system. The needed elements are as follows:

- The M&O lacks a tiered structure for its documents. (MG.2-5)
- AP-5.1Q for YMSCO and the M&O does not require training requirements to be identified when developing implementing procedures. (MG.2-4)
- AP-6.1Q does not clearly specify a Responsible Manager's role for document distribution. (MG.2-3)
- AP-5.1Q for YMSCO and the M&O lacks a document review component in its document control system, that would ensure that documents are periodically and consistently reviewed. (MG.2-2)

10.0 NOTEWORTHY PRACTICES

NP-1 Workforce involvement at all levels in the development of processes to support ISMS, work control, and safety programs is a significant asset.

- The "Team Yucca" and "Hazards Elimination and Action Team" committees demonstrate the M&O's team approach to safety. (HAZ.1-S-2)
- The "Worker Bill of Rights, which encourages employees to exercise their right to stop work whenever they believe all hazards have not been properly addressed, conveys the written policy that safety is management's top priority. (HAZ.1-S-4)
- The "Time Out for Safety/Stop Work Authority Program" has greatly enhanced employees' ability to have a direct impact on their work environment. (MG.3-S-1)

11.0 CONCLUSION

The ISMSV Team recommends that YMSCO Project Manager approve the CRWM M&O's ISMS Description Document. It is the team's expectation that the Opportunities for Improvement will be reviewed by YMSCO and formally dispositioned. It is recommended that the status of any corrective actions or improvements from this ISMSV report, as well as any modifications to the M&O's ISMS be presented and briefed at the start of the ISMSV Phase II, which will evaluate the implementation of the ISMS at the YMP.

12.0 LESSONS LEARNED

The following lessons were learned during the conduct of this ISMSV, Phase I.

Pre-Visit:

- The pre-visit was valuable, briefings were helpful, and the material from the pre-visit was beneficial.

- It was helpful for the Team Members to have some of the basic ISMS documentation and procedures available for review before the start of the On-Site/Facility visit. If possible, advance reading of ISMSV-II material should be encouraged prior to coming on site.

- The Team could not access the contractors web computer system from remote locations. This will probably not help for Phase II. Counterpart support was very good at getting documents via e-mail and should be used for ISMSV, -Phase II.

- The development of Lines of Inquiry (LOI) was helpful for some Team Members in their preparation for the review.

- Team training should include the report structure for the CRADs, the final shell report, and the formatting of the issue statements.

Site Visit:

- Beginning interviews Monday morning were premature. The schedule on the first day should allow some time for subteams to gather with the team leader and discuss line of inquires, interview schedules, and other issues before beginning the interviews.

- Team meetings could have allowed for more team discussions and would have been better if there were some time allotted for team-only time to discuss issues/concerns.

- The interview schedule should allocate one hour for each session. This would give at least 45 minutes for each interview and allow team members time to finalize any notes on the interview just concluded before proceeding to the next interview. Limiting the maximum number of interviews each day could help minimize information overload. If needed, an additional day could be added for interviews.

- It would be helpful to combine as many related interviews as possible. Providing job titles next to interviewees' name would help understand each individuals role when conducting interviews.

- Assigning a dedicated point of contact from YMSCO and the M&O to each team member was helpful and facilitated the process. The support provided by the M&O and YMSCO was excellent.

- Reports from other ISMSV's were used to provide examples for the Team; however, some of the examples were not consistent in format. Whenever possible, all examples should be in the desired format for reporting.

General:

- If team member experience permits, it would be helpful if experienced ISM team members could be paired with less experienced members.

- Unfortunately, the scheduling of mandatory maintenance made the computers provided for the team members at the team offices unavailable from Friday night until Sunday morning. This necessitated a compression of the team's ISMS Verification process schedule by one day.

- As many documents as possible should be final when conducting the ISMSV, Phase I. Many procedures were still in draft form after the pre-visit, which required looking at different versions of some documents to determine the most current.

- Throughout, a maximum effort was devoted to fostering interaction between the subteams to enhance the correlation of results, concerns, and strengths. This interaction should be promoted whenever possible.